Many adaptations of these formulae are used for divers purposes. For example the kerosene in formula #2 may be replaced by a kerosene extract of pyrethrum flowers and then serves as an excellent fly spray and insecticide.

Ammonium linoleate emulsions of fatty acids may be used for waterproofing concrete, cement and stucco by diluting these emulsions to varying degrees and mixing them in while forming or applying these structural materials. The ammonia and water gradually evaporate and the lime magnesia present in the cement and sand combine with the linoleic and other fatty acid to form an insoluble metallic soap which is water-repellent.

The bleaching of fats, oils and waxes may be consummated by forming an emulsion of the fat, oil or wax and diluting the same with a large excess of water. There is then introduced a concentrated solution of common salt. The latter causes the emulsion to break and the fat, oil or wax rises to the surface. Some of the coloring matter stays in the water and dirt and other insoluble matter settles out on standing. Then the upper layer of fat, oil or wax is drawn off and is found to be lighter in color, free from dirt and insoluble matter and often improved in odor.

Formula #8 is used in hair treatments in place of olive oil as it penetrates better and is washed out more readily. Formulae #14 and 18 are similarly used in cosmetics.

In chemical reactions where contact between a watery solution and a water insoluble material is desired resort is had to emulsification. In this way the two media are subdivided into minute particles having an extremely large surface area with the result that the reaction proceeds more rapidly and completely. For example, if we try to hydrolyze ethylene dichloride with an aqueous solution of caustic soda we see that the two liquid phases are immiscible. If, however, the ethylene dichloride is emulsified and then treated with an aqueous solution of caustic soda, under suitable conditions, hydrolysis soon starts. These emulsions for promoting synthetic reactions should be agitated violently especially in those cases where acids or salts are present. A recent adaptation of this principle concerns itself with the hydrogenation of oils. By emulsifying the oil, infinitely larger surface is exposed to the attack of the hydrogen with a resultant increase in speed and completeness of hydrogenation.

In the paint, varnish and printing ink industries various "driers" are in continual use to speed up the drying of the oil vehicle. Metallic linoleates are in great favor in many directions. Their lack of uniformity and dark color has prevented their more universal use. They can now be made absolutely uniform and of a lighter color by adding a hot solution of a metallic salt (while stirring vigorously) to a hot solution of ammonium linoleate.

In conclusion it is hoped that the above definite exemplifications of utilitarian applications of emulsion phenomena will serve as a starting point to those technicians who are continually on the look-out for improvements in process; production of novel products; or lowering of costs and fire-hazards.

Oil of Sumac

By H. P. TREVITHICK

SUMAC berries are very plentiful in the United States, particularly along the Atlantic seaboard. They are used particularly as a source for tannin, in textile dyeing and in medicine.

On extraction with petroleum ether, they yield a dark, greenish brown colored, rather viscous oil. The total oil content was 17.54%.

This oil had the following characteristics:

Moisture & Volatile Matter @ 105° C.	0.18%
Specific Gravity @ 15.5° C.	0.9256
Iodine Value (Wijs)	96.1
Saponification Value	183.2
Free Fatty Acids (Oleic)	10.7%
Acid Value	21.4
Unsaponifiable Matter (petroleum ether extract)	2.38%
Index of Refraction @ 25° C.	1.4726
Index of Refraction @ 20° C.	1.4744
Total Fatty Acids & Unsaponifiable	95.1%
Iodine Value of the Fatty Acids	96.7
Neutralization Value of Fatty Acids	193.2
Mean Molecular Weight	296.9
Titre	25.7° C

These values are quite different from those given by *Lewkowitsch,* (See Volume II, of the VI Edition, page 246).

The hardening of stearolic ethyl ester under hydrogenation is said to occur in steps, the triple bond being reduced to a double bond before any stearic acid begins to form. Harrie's ozonation method shows the absence of any shifting of the triple bond during hydrogenation. *Chem. Umschau Fette, Oele, Wachse u. Harze* 38,23-4 (1931).